

REMARKS

This responds to the Office Action mailed on August 19, 2004.

By way of this amendment, independent claim 16 is amended; claims 18, 27, and 29 are canceled; and claims 108-115 are added. As a result, claims 16-17, 19-21, 26, 28, 30, 65-85, and 87-115 are now pending in this application.

For the convenience of the Examiner, Applicants' remarks concerning the claims will be presented in the same order in which the Examiner presented them in the Office Action.

Amendment to the Title

The title has been amended to more accurately reflect the claimed subject matter by substituting "Packages" for "Package".

Amendments to Claim 16

Independent claim 16 has been amended by adding "entirely throughout an IC mounting region" (support may be found, for example, in FIGS. 5 and 6); by adding "physically and" before "electrically" (three occurrences) (support may be found, for example, in the paragraph beginning on page 14, line 9); by adding "of the plurality of conductors" (two occurrences) (antecedent support may be found within the claim); and by adding "and wherein the at least one capacitor is mounted atop and at a diagonal to the first and second conductors to which it is electrically coupled" (support may be found, for example, within canceled claim 27, in FIG. 7, and on page 15, lines 10-13). No new matter has been introduced.

New Claims 108-115

New claims 108-115 have been added to provide Applicants with additional protection to which Applicants are believed entitled. New claims 108-115 are supported by the original disclosure. No new matter has been introduced.

New independent claim 108 is based upon independent claim 16, as amended, with the following differences. Claim 108 includes the additional limitation "a plurality of capacitors distributed substantially throughout the IC mounting region", support for which may be found,

for example, in dependent claim 28. Claim 108 further includes the language “of each capacitor” (two occurrences) (antecedent support may be found within the claim). Further, claim 108 does not contain the limitation “and wherein the at least one capacitor is mounted atop and at a diagonal to the first and second conductors to which it is electrically coupled”.

New dependent claim 109 is identical to canceled claim 29.

New dependent claim 110 is identical to claim 17.

New dependent claims 111-113 are identical to claims 19-21.

New dependent claim 114 is identical to claim 26.

New dependent claim 115 is identical to claim 30.

No new matter has been introduced.

Rejection of Claims 16-21 and 26-29
under 35 U.S.C. §102(e) as Anticipated by Salem

Claims 16-21 and 26-29 were rejected under 35 U.S.C. §102(e) as being anticipated by Salem (U.S. 6,300,677).

As mentioned above, independent claim 16 has been amended, and claims 18, 27, and 29 have been canceled.

Salem discloses a plurality of capacitor assemblies 86 (FIGS. 4A-4B) coupled between an integrated circuit 82 and conductors within a connection well 88.

Independent claim 16, as amended, now recites a substrate having a substantially planar upper surface entirely throughout an IC mounting region [emphasis added].

The rule under 35 U.S.C. §102 is well settled that “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). MPEP §2131.

Salem fails to disclose a substrate having a substantially planar upper surface entirely throughout an IC mounting region, because Salem’s connection well interrupts the upper surface.

For the above reasons, claim 16 should be found to be allowable over Salem, and Applicants respectfully request that the rejection of claim 16 under 35 U.S.C. §102(e) as anticipated by Salem be withdrawn.

Claims 17, 19-21, 26, 28, and 30, which depend from claim 16 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

**Rejection of Claims 16-21, 26, 27, and 30
under 35 U.S.C. §102(e) as Anticipated by Mosley**

Claims 16-21, 26, 27, and 30 were also rejected under 35 U.S.C. §102(e) as being anticipated by Mosley (US 2002/0071258 A1).

Mosley discloses an IC package having a multi-terminal capacitor 200 (FIGS. 1A, 1B, and 2) coupled between a die 206 and a substrate 209.

As mentioned above, independent claim 16 has been amended, and claims 18 and 27 have been canceled.

Independent claim 16, as amended, now recites that the at least one capacitor is mounted atop and at a diagonal to the first and second conductors to which it is electrically coupled.

As stated above, the rule under 35 U.S.C. §102 is well settled that “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.”

Mosley fails to disclose a package in which at least one capacitor is mounted atop and at a diagonal to the first and second conductors to which it is electrically coupled.

For the above reasons, claim 16 should be found to be allowable over Mosley, and Applicants respectfully request that the rejection of claim 16 under 35 U.S.C. §102(e) as anticipated by Mosley be withdrawn.

Claims 17, 19-21, 26, 28, and 30, which depend from claim 16 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

**Rejection of Claims 16-21, 26, 27, and 30
under 35 U.S.C. §102(e) as Anticipated by Naito**

Claims 16-21, 26, 27, and 30 were also rejected under 35 U.S.C. §102(e) as being anticipated by Naito et al. (U.S. 6,556,420).

As mentioned above, independent claim 16 has been amended, and claims 18 and 27 have been canceled.

Naito discloses an IC package having a multi-terminal capacitor 43 (FIGS. 1-4) coupled between a chip 64 and a substrate 62. The capacitor 43 is located within a cavity 66 in the underside of the substrate 62.

As stated earlier, the rule under 35 U.S.C. §102 is well settled that “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.”

Naito fails to disclose a substrate having a substantially planar upper surface entirely throughout an IC mounting region, and at least one capacitor within the IC mounting region.

For the above reasons, claim 16 should be found to be allowable over Naito, and Applicants respectfully request that the rejection of claim 16 under 35 U.S.C. §102(e) as anticipated by Naito be withdrawn.

Claims 17, 19-21, 26, 28, and 30, which depend from claim 16 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

Rejection of Claim 30 under 35 U.S.C. §103(a)
as Unpatentable over Salem in view of Patel

Claim 30 was rejected under 35 U.S.C. §103(a) as being unpatentable over Salem in view of Patel et al. (U.S. 5,929,646).

Salem was discussed earlier.

Patel discloses an IC package that couples solder bumps on a module package to pads of a substrate.

As Applicants asserted above, independent claim 16, as amended, now recites a substrate having a substantially planar upper surface entirely throughout an IC mounting region [emphasis added], thus clearly distinguishing it from Salem. Nor does Patel appear to disclose this limitation.

To establish a *prima facie* case of obviousness under 35 U.S.C. §103, the prior art reference (or references when combined) must teach or suggest every limitation of the claim. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA, 1974). MPEP §2143.

The asserted combination of Salem in view of Patel fails to teach or suggest all of the claim limitations present in independent claim 16, as amended, so a *prima facie* case of obviousness has not been established.

If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious. MPEP §2143.03.

Claim 30, which depends from claim 16 and incorporates all of the limitations therein, is thus asserted to be allowable for the reasons presented above.

Additional Elements and Limitations

Applicants consider additional elements and limitations of claims 16-17, 19-21, 26, 28, 30, and 108-115 to further distinguish over the cited references, and Applicants reserve the right to present arguments to this effect at a later date.

Allowable Subject Matter

Applicants note with appreciation the allowance of claims 65-85 and 87-107.

AMENDMENT UNDER 37 C.F.R. 1.116 – EXPEDITED PROCEDURE

Serial Number: 10/006,292

Filing Date: December 3, 2001

Title: INTEGRATED CIRCUIT PACKAGES WITH SANDWICHED CAPACITORS (as amended)

Assignee: Intel Corporation

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Dkt: 884.534US1 (INTEL)

Conclusion

Applicants respectfully submit that claims 16-17, 19-21, 26, 28, 30, 65-85, and 87-115 are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicants' attorney, Walter W. Nielsen (located in Phoenix, Arizona) at (602) 298-8920, or the below-signed attorney (located in Minneapolis, Minnesota) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

P.R. PATEL ET AL.

By their Representatives,

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Date Oct. 19, 2004

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 19th day of October 2004.

Chris Hammond

Name

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Signature